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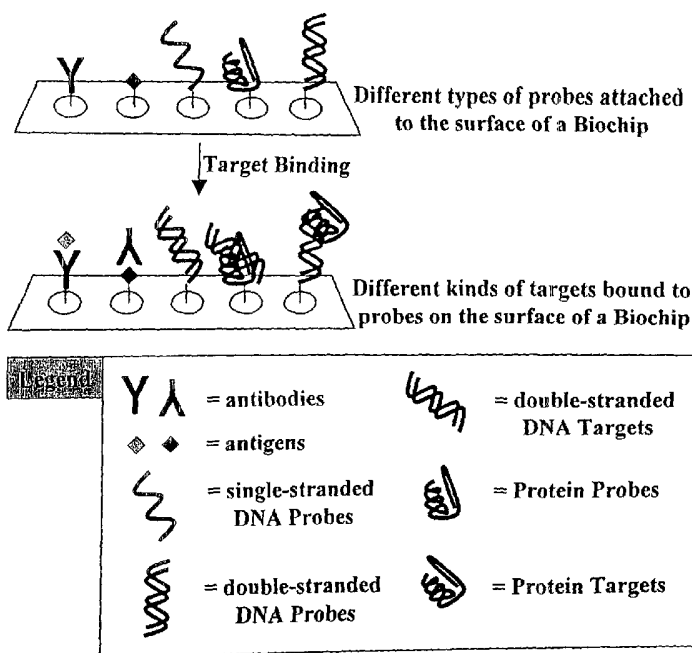
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US 60/308,870 (CON)  
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[Continued on next page]

(54) Title: METHODS AND DEVICES FOR DETECTING HYDROCARBONS AND PETROLEUM PRODUCTS



(57) Abstract: The invention relates to methods and devices for detecting hydrocarbons, such as petroleum, in samples, such as environmental samples, e.g., soil, sand, and water as shown in Figure 12.



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*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

**INTERNATIONAL SEARCH REPORT**

International application No.

PCT/US02/23625

**A. CLASSIFICATION OF SUBJECT MATTER**  
 IPC(7) : C12Q 1/00, 1/68; G01N 33/53, 33/569  
 US CL : 435/4, 6, 7.1, 7.2, 7.31, 7.32  
 According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**  
 Minimum documentation searched (classification system followed by classification symbols)  
 U.S. : 435/4, 6, 7.1, 7.2, 7.31, 7.32

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
 Please See Continuation Sheet

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X,P	PADDA et al. A Novel Gene Encoding a 54 kDa Polypeptide is Essential for Butane Utilization by <i>Pseudomonas</i> sp. IMT37. <i>Microbiology</i> . September 2001, Vol. 147, pages 2479-2491, see entire document, especially figure 3.	1-7, 11, 14, 20-24
X	MCDONALD et al. Methane Oxidation Potential and Preliminary Analysis of Methanotrophs in Blanket Bog Peat Using Molecular Ecology Techniques. <i>FEMS Microbiology Ecology</i> . 1996, Vol. 21, pages 197-211, see entire document, especially figure 4 and table 3.	1-3, 5-6
A	SCHNEEGURT et al. The Application of Molecular Techniques in Environmental Biotechnology for Monitoring Microbial Systems. <i>Biotechnol. Appl. Biochem.</i> 1998, Vol. 27, pages 73-79.	1-35

Further documents are listed in the continuation of Box C.  See patent family annex.

\* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"E" earlier application or patent published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
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"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

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**INTERNATIONAL SEARCH REPORT**

PCT/US02/23625

**Continuation of B. FIELDS SEARCHED Item 3:**

Databases: CAPLUS, MEDLINE, BIOSIS, EMBASE, SCISEARCH, AGRICOLA

Search Terms: petroleum, natural gas, methane, butane, propane, hydrocarbon, array, combinatorial, library, probe, two-site, multi-site, microtiter, microwell, slide, chip, sensor, bacteria, microorganism, ribosomal, pmoA, PAH, pseudomonas, alcaligenes, stentrophomonas